

WHAT IS CLAIMED IS:

1. An automatic gain adjustment device of a feedback control system which uses a phase difference between an output signal obtained from a controlled object and an input signal while controlling the object based on the input signal, the automatic gain adjustment device comprising

phase shifting means, connected to an input stage of the feedback control system, for shifting a phase of the input signal, wherein

a phase shift amount of the phase shifting means is set such that a frequency of the input signal to be supplied to a closed loop coincides with a crossover frequency at which an open loop gain forming the feedback control system becomes 0 dB.

2. The automatic gain adjustment device according to claim 1, further comprising:

a multiplier for multiplying the input signal and the output signal obtained from the controlled object; and

an integrator for integrating multiplying results of the multiplier, wherein

the open loop gain is converged to 0 dB by adjusting a gain of the feedback control system based on a sign of an output value of the integrator.

3. The automatic gain adjustment device according to claim 1,

wherein

the open loop gain is converged to 0 dB using bisection method.

4. An automatic gain adjustment method for a feedback control system, which uses a phase difference between an output signal obtained from a controlled object and an input signal while controlling the object based on the input signal, the automatic gain adjustment method comprising:

setting a phase shift amount such that a frequency of the input signal to be supplied to a closed loop coincides with a crossover frequency at which an open loop gain forming the feedback control system becomes 0 dB; and

shifting a phase of the input signal based on the phase shift amount.

5. The automatic gain adjustment method according to claim 4, further comprising:

multiplying the input signal and the output signal obtained from the controlled object;

integrating results of the multiplication; and

converging the open loop gain to 0 dB by adjusting a gain of the feedback control system based on a sign of an output value that has been integrated.

6. The automatic gain adjustment method according to claim 4,

wherein

the open loop gain is converged to 0 dB using bisection method.